

RETURN to an Order of the Honourable The House of Commons,  
dated 14 March 1882.—*for*

COPY "of REPORTS made by F. R. CRUISE, Esq., M.D., F.C.P., upon the SANITARY CONDITION of the GAOL at OMAGH, the Result of a Special Inspection of that Institution made by him on the 21st February 1882."

## R E P O R T.

To the Members of the General Prisons Board, Dublin Castle.

Gentlemen,  
93, Merrion-square, W.,  
24 February 1882.

In accordance with your instructions, conveyed to me last Saturday by Captain Barlow, I visited the gaol at Omagh on the 21st February.

I was accompanied by your architect, Mr. W. J. Welland, to whose foresight and intelligent care in directing the needful excavations, &c., I am indebted for the facility with which a thorough examination of the premises was accomplished.

I was met at the gaol by Dr. Thompson, the medical attendant of the institution, who, as it will later appear, gave me much valuable information.

The task which I proposed to myself in visiting Omagh Gaol was—

1st. To examine and report upon the state of the institution generally, from a sanitary point of view, and to ascertain whether the complaints put forward by the "suspects" now confined there were well founded or not.

2nd. To investigate, and if possible ascertain, the cause of the recently fatal illness of the late Governor, Captain Disney.

1st. As regard the general state of the prison, and the complaints made by the "suspects"—

The Omagh Gaol is remarkably healthily situated, surmounting a hill, and subject to the free play of fresh air. Dr. Thompson informed me that the health of the prisoners is *remarkably good*, no case of zymotic disease having occurred in the institution for a considerable time, except that of the late Governor, Captain Disney.

Further on in this Report, I will discuss the cessation, &c., of this lamentable death.

I saw but one solitary patient in the hospital, a convicted prisoner, already convalescent.

The yard for the "suspects" exercise is at present fairly spacious, a wall having been knocked down between it and an adjoining space. During my visit the sun was shining, and the yard looked bright and cheerful, and certainly was airy.

The shed is spacious in proportion to the yard, and has a concrete floor recently put down, and a central seat is in readiness as soon as the floor is quite dry.

As regards the water supply, I append Dr. Cameron's report of his analysis, which is *not* satisfactory.

Dr. CAMERON'S REPORT, 26th February 1882.

"Composition of a specimen of water submitted to me for the purpose of analysis by the Prisoners Board, and taken from the gaol, Omagh.

"An Imperial gallon (70,000 grains weight) contains the following, in grains:—

								Grains.
Total solid matters	-	-	-	-	-	-	-	40-600
Including—								
Albumenoid ammonia	-	-	-	-	-	-	-	0-019
Saline ammonia	-	-	-	-	-	-	-	0-008
Nitrogen, in nitrates and nitrites	-	-	-	-	-	-	-	0-010
[Equal to nitric acid	-	-	-	-	-	-	-	0-050]
Chlorine	-	-	-	-	-	-	-	4-426

"This water has no peculiar odour or flavour. It is nearly colourless when viewed through a column two feet in depth. It is a hard water, rather too hard, in my opinion, for constant use. It contains very numerous floating particles, which, under the microscope, are seen to consist in part of mycelium, spores, and a few specimens of paramaecium.

"The amount of nitrogen in the albumenoid matter is very much larger than is found in good waters. In some yellow peaty waters 0-019 grains of albumenoid ammonia occurs, and though a very high proportion might not, under certain circumstances, be considered as an indication that the water was dangerous to use, but the water from Omagh Gaol is not a peaty water, and therefore the presence of 0-019 grains of albumenoid ammonia per gallon is sufficient to condemn it. I am therefore of opinion that this water is not fit for use as a potable water, and I am further of opinion that the water is a dangerous one to drink, without having previously been boiled.

(signed) "Charles A. Cameron, M.D.,  
Analyst and Medical Officer for Dublin."

I examined the earth closet complained of and found it in perfect order and well situated. The fear that it could poison the food in the kitchen, which is not directly under it, is, in my opinion, quite unfounded.

The sewerage of the quarters occupied by the "suspects" is better than in any other part of the prison, delivering by a rapid descent into a cesspool situated at a considerable distance from the building in which they are located, and ventilated at the head of the sewers by large iron shafts which open above the roof of the gaol. I went through the rooms, &c., occupied by the "suspects," found them clean and free from offensive odours, and in, what appeared to me, a wholesome condition.

As regards the present hygienic state of the Omagh Gaol, I cannot do more than repeat Dr. Thompson's Report of the special freedom of its inmates from illness.

After careful examination of the department of Omagh Gaol occupied by the convicted prisoners, the portion furthest from the quarters occupied by the "suspects":—

I am of opinion that it would be well, as soon as possible, to alter the sewerage arrangements, which are old-fashioned, with built sewers, and cesspools too near the building, and, closing these, to substitute earthenware pipes to carry the sewage to the lowest cesspool on that side of the gaol, which cesspool is placed at a safe distance.

It is true that no illness exists now, owing, I believe, to the admirable ventilating shafts, &c., introduced by Mr. Welland; but the system at present in existence there is not in accordance with modern scientific opinion, or such as I could approve of, and in the event of an outbreak of epidemic disease, which is apt to occur wherever human beings are crowded together, would not be equal to the emergency.

I would also complete the substitution of earthenware pipes for the built sewers in the "suspects" quarters, and trap all the pipes entering the distant cesspool.

I have discussed these items with Mr. Welland, who, as well as Dr. Thompson, shares my opinions. The latter, so far back as 1877 and 1879, actually advised these changes to be made in his Reports.

I remarked

I remarked that the guardroom, occupied by the soldiers on duty in the gaol, is too small, and the privy, for their use, not well kept.

Since my visit, Mr. Welland tells me arrangements have been made to enlarge the guardroom, and the privy has been closed and replaced by an earth-closet.

It is indispensable that the well-water be no longer used for drinking purposes, and I recommend that the Omagh town-water supply be at once introduced. Dr. Thompson states that it is good, and it would be satisfactory that his opinion should be fortified by some high chemical authority such as Dr. Cameron.

2nd. Having now stated my impressions as to the general state of Omagh Gaol, I will pass on to the investigation of the illness and death of the late Governor.

I ascertained that Captain Disney arrived about the 21st December last; that he did not at first enter the Governor's house, but took up quarters in the rooms now occupied by Chief Warden McGann, near to the prison entrance, and that about the end of December he moved into the Governor's residence, which is a *detached building*, situated about the middle of the area occupied by the entire jail.

At the time Captain Disney moved to this house, the sewer in the basement was opened for the purpose of being cleared and filled up, and a new sewer laid in earthenware pipes outside the house. This was being done in consequence of complaints of bad smells, and illness, during the residency of the preceding Governor, Mr. Mason, who had been promoted to a like post in Galway Gaol.

It seems well to observe here that I learned from Dr. Thompson that Mr. Mason, during his residence in the Governor's house, suffered frequently from sore throat and diarrhoea; that he lost three children from diphtheritic affections (a frequent result of foul-air poisoning), and that Mrs. Mason did not enjoy good health.

The explanation of these facts will appear later.

At or shortly after the time Captain Disney moved to the Governor's house, as already stated, the sewer in the basement was *actually open*, and in direct communication with the general sewer of the portion of the building occupied by the convicted prisoners, thus he was exposed to a concentrated dose of poisonous sewer gas, rendered all the more intense by diminished facility of ventilation due to the cold weather. Under these circumstances, it is not to be wondered at that Captain Disney became ill; so ill by the 28th of January 1882, that he was obliged to take to bed. In a few days the specific rash of typhoid fever appeared, and he died on the 7th of this month of February.

The cause of Captain Disney's illness seems to me obvious. I am satisfied that he was poisoned by sewer gas, and took typhoid fever, a very usual effect.

It is deeply to be regretted that Captain Disney did not obey Dr. Thompson's solemn warning not to occupy the Governor's house until the sewer repairs in process of execution were completed; I believe that his unwise neglect of this good advice cost him his life. This calamity is even more to be regretted, as other apartments in the prison could have been easily used by Captain Disney during the repairs of his house.

Here I wish to make a few observations explaining the illness which occurred in the Governor's house during the residence of Mr. Mason and his family.

As already stated, a sewer runs under the basement. This sewer is a common built drain of the old-fashioned style, flagged top and bottom, very near the surface, and entering untrapped the main sewers of the convicted prisoners' portion of the building.

Into this sewer, under the basement, the w.c. of the Governor's house delivered, and also the waste-pipe from the sink in the housemaid's closet.

On investigation, we found the w.c. in a very bad state of repair. Its soil-pipe of cast iron, which is apt to leak, and nearly impossible to fit staunchly, and the sink of the housemaid's closet, guarded by a trap, in a very doubtful condition.

By these avenues of entrance, not to speak of permentation and sewage infiltration of the basement floors, sewer gas had access to the house, so that bad smells and illness are perfectly comprehensible, and the only wonder that remains is how Mr. and Mrs. Mason escaped fatal illness.

It would seem to me fair to assume that in Captain Disney's case, the sewer being open, the quantity of gas was unlimited, and his poisoning being overwhelming, the fever was proportionately severe and rapidly fatal.

In Mr. Mason's time the leakage was limited in quantity, and the poison diluted, so we may understand his escape and his wife's, while the young children, being prone to absorb infection, succumbed.

Moreover, we know by experience that for the reception of infection poison a certain (as yet unexplained) constitutional state is requisite, and thus, unaccountably, some escape while others fall victims.

Gentlemen, I beg now to conclude this lengthy Report, the result of a very careful examination of the gaol at Omagh. I trust that I have made sufficiently clear my views:

1st. On the general condition of the institution from a sanitary point of view, and the exaggeration of some of the statements made by the "suspects," excluding, of course, the water supply, which is absolutely condemned by Dr. Cameron's analysis and report:

2nd. The suggestions I would offer for immediate adoption, the details of which may be wisely embodied in a Supplemental Report which I will furnish; and,

3rdly. The unsanitary state of the Governor's house, exceptionally bad, contrasted with the remainder of the prison, owing to which, combined with Captain Disney's imprudence in remaining in it during repairs, the late calamity may be traced.

I am, &c.

(signed) *F. R. Cruise, M.D. Univ. Dublin, F.C.P.,*  
&c. &c. &c.

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#### SUPPLEMENTAL REPORT.

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To the Members of the General Prisons Board, Dublin Castle.

Gentlemen, 93, Merrion-square, W., 13 March 1882.

On the 24th of last month I had the honour to submit to you a Report upon the sanitary condition of the gaol at Omagh, the result of a visit paid by me to that institution on the 21st February 1882. I mentioned in that document that I proposed to send in a Supplemental Report, embodying certain suggestions of alterations which I believe necessary for remedying the present faulty state of the sanitary provisions.

I beg now to forward the promised Supplemental Report.

In the original Report I condemned the sanitation of the gaol, because, although no illness existed at the time of my visit, the state of affairs was such as to convince me that the health of the prisoners was unsafe, and the arrangements such as could not be justified in the (very natural) event of an outbreak of illness.

On conversing with Dr. Thompson I found that his views, founded on long experience as medical officer of the gaol, fully corroborated mine, and that several of his Reports in past years actually gave warning on the topics in question. I insert here two of his Reports, with their dates, and I have by me at present a journal of his, dating back to the latter part of the year 1877, in which similar opinions are recorded, and a rough sketch made, indicating alterations in the sewerage, not at all unlike those I now venture to propose for the adoption of your Board.

## DR. THOMPSON'S REPORTS.

"14th November 1879.—I have to draw the attention of the Governor to the large number of prisoners complaining and suffering from diarrhoea, in some cases attended with vomiting, and considerable constitutional disturbances.

"I attribute this to three causes,—

"1st. The bad and impure condition of the water.

"2nd. Bad sewerage, and

"3rd. The scale of dietacy, which in my opinion is entirely insufficient to support, in a proper manner, either the health or strength of the prisoners.

"1st April 1880.—Made my usual quarterly inspection of the gaol; I am glad to see that steps are being taken to clean up the cesspools, which were in my opinion a fertile source of intestinal complaints. The river water, which the prisoners drank when put for washing purposes in their cells, and which is largely impregnated with sewage matter, is, I believe, not now employed. When I referred, in a previous Report, to the impurity of the water, causing diarrhoea, it was to this water I referred, not to the well water, which was analysed by Professor Cameron, and which I was perfectly well aware was very fair water.

(signed) "Edwd. Thompson, M.B.,  
Medical Officer, H.M. Prison, Omagh."

It will easily be seen from the foregoing Reports that the health of the inhabitants of Omagh Gaol has not been quite satisfactory in the past, even outside the lamentable death of Captain Disney, which I have fully explained in my last communication, and now I shall proceed to suggest certain reforms, &c.

The heads under which I propose to consider the needed reforms are—

1st. *The Water.*

2nd. *The Sewerage.*

1st. As regards the water.—It is much to be regretted that, owing to some unaccountable error on the part of the officials at Omagh Gaol, the specimen sent to Dr. Cameron (the analysis of which appears in my Report of 24th February 1882) was not the well water at all. It must have been either the river water, which is very impure, or from a tank in which it had undergone decomposition. This error led to the very strong condemnation of the water of Omagh Gaol contained in my Report.

I here append Dr. Cameron's latest analysis of a sample unquestionably obtained from the well in Omagh Gaol, from which it will be seen that that water is good, even rating amongst first-class waters. This analysis is nearly identical with one of the same water by Dr. Cameron, which I have by me, dated 7th February 1880.

The discovery of this strange mistake of the officials, which at the moment placed their institution in so unfavourable a light, explains the absence of actual illness, which would have been an extraordinary problem, if, as a matter of fact, the "suspects" and prisoners had been drinking such dangerous water.

## ANALYSIS of Water taken from a Well in OMAGH GAOL, 3rd March 1882.

"An Imperial gallon (30,000 grains in weight) contains the following, in grains:—

Total solid matter	-	-	-	-	-	-	38.900
Including—							
Albuminoëd ammonia	-	-	-	-	-	-	0.006
Saline ammonia	-	-	-	-	-	-	0.004
Nitrogen in nitrates and nitrites (equal to nitric acid)	-	-	-	-	-	-	traces.
Calorific	-	-	-	-	-	-	4.400

"This water is colourless. It has no peculiar odour or flavour. It is a hard water, and not well adapted for washing or cooking with. It contains very moderate amounts of nitrogen in the forms of ammonia, organic matter, and nitrogen acids. It is a first-class water; though not absolutely up to the standard of purity it is very close.

"It is much purer than most of the potable waters in this country.

(signed) "Charles A. Cameron."

My suggestions concerning the water supply for Omagh Gaol amount to this: that arrangements should be perfected, securing the use of the well water, or the water of Omagh town, for all drinking, culinary, and *lavatory* purposes, and limiting the use of the river water to supplying tanks for flushing the water-closets and sewers.

I specially direct attention to the danger of using the river water for the *lavatories*, because the prisoners may drink it there, and are almost certain to do so if it is supplied to their cells for washing purposes. No tap, or other means of obtaining water from the flushing tanks, except for flushing purposes, should be allowed to exist.

All overflow pipes from the cisterns containing water intended for drinking, cooking, or lavatories, should discharge in the open air, perfectly disconnected from any drain; and both in the prison and in the Governor's house, all sinks inside should be similarly arranged, and no draw-off pipe for filling crofts or jugs in bed-rooms or elsewhere, be taken either from the flushing tanks or w. c. cisterns.

2nd. As regards the sewerage.—I would completely alter it. In what manner I will presently explain.

In the first instance, I will briefly describe the present arrangements.

It will be remembered that Omagh Gaol was built about 50 years ago, and the old-fashioned system of cesspools and built drains adopted as a matter of course.

On reference to the accompanying sketch of the ground plan (see end of this Report) it will be seen (by the dark blue lines which indicate the cesspools and sewers), that within the boundary walls of the gaol there exist no less than eight cesspools. These are marked 1, 2, 3, &c., on to 8. Of these the first five are, in my opinion, a source of great danger. They lie actually against the wall of the male prison, which forms one of their walls, and into each enters from the basement an ordinary built drain. Each cesspool delivers its liquid overflow into a built sewer (the course of which to cesspool 7 is traceable by the blue line), retaining meantime its fætid and poisonous solid contents, until a periodic cleaning out purifies it.

The old sewer of the Governor's house, which receives the soil-pipe of the w. c., &c., passed under the basement of his house, and crossed over to join, untrapped, the sewer of the male prison. (See sketch.)

I ascertained that some of the cesspools are dry and not in use; nevertheless, I consider them dangerous, because, communicating untrapped with the sewer skirting the building, they afford ready inlets for sewer gas.

I can hardly imagine a more objectionable arrangement, and feel certain that nothing could have saved the institution from pestilence except the large ventilating shafts placed over each cesspool and sewer head, and reaching above the roof.

To Mr. W. J. Welland is due the merit of carrying out this salutary device.

The sewerage arrangements of the female prison (recently occupied by the "suspects") are not at all so bad. On looking at the sketch it will be observed that a sewer (blue line) starts from that quarter, and, without the intervention of other cesspools, delivers into cesspool No. 8. I am informed that a great portion of this sewer is constructed with earthenware pipes, the remainder being the ordinary built drain. It is well ventilated at its head by a shaft opening over the roof of the gaol. Besides these main sewers several smaller ones and surface drains exist, all ultimately joining the mains described.

Having thus briefly detailed the system of sewerage of Omagh Gaol, and, I trust, made clear its danger from access of sewer gas, I will proceed to indicate the remedial changes which I consider necessary.

In the first place I would open up the cesspools numbered 1, 2, 3, 4, 5, and 6, and having cleaned them out, I would fill them up with clay and lime mixed. I would adopt the same steps with all the built drains of the basement of the prison. During the process I would build up and hermetically cement all the overflow drains from the cesspools (1 to 6, inclusive) to the sewer which skirts the male prison, thus completely cutting off all possible access of sewer gas from cesspool 7.

I may here observe that cesspools 7 and 8 must remain (subject to certain regulations

regulations which I will state further on), because the Omagh Gaol is so situated that no ground (as I am informed) can be obtained outside the prison boundaries, and at the wall alongside of these cesspools, it will be noticed, the river flows.

I am of opinion that cesspools 7 and 8, properly cared, will give rise to no danger, because they are situated at a considerable distance from all inhabited portions of the building, and, moreover, are placed in an open space subjected to free ventilation.

Next, I would lay glazed earthenware pipes in place of the old drain, and by means of junction pieces, I would direct into this new sewer all the outlet pipes of the water-closets, lavatories, and baths of the male prison.

The proper dimension of these pipes, whether 9 or 12 inches in diameter, is a point I must refer to your able architect, Mr. Welland. I consider 9-inch pipes quite sufficient to carry off the sewerage, but if the main-fall from so considerable a building is to be taken by them, it may be well to select the larger sizes.

This new sewer of glazed earthenware pipes, owing to the declivity of the ground, can easily be laid with a good fall to cesspool 7.

Into this sewer all the soil pipes from the water-closet traps should open directly, the soil pipes being carried upwards over the roof of the gaol, so as to act also as ventilating shafts for the sewer.

The waste pipes of the lavatories and baths should deliver into the open air under a grating, over the water of an intercepting trap, such as pattern A.

INTERCEPTING TRAP (Pattern A.).



Thus the risk of return of sewer gas will be obviated.

These traps should all be placed outside the building. In laying the pipes, the minutest care should be taken to obtain a good fall, to lay them on a solid foundation, and to prevent the Portland cement used in laying the joints from producing a ridge inside, which ultimately forms a dam and obstructs the flow of sewage. This ridge can easily be scraped away from the inside when soft.

In its earlier stages this pipe sewer need not lie at great depth, but from the point where the sewer from the Governor's house joins it, owing to the great depth of the basement story of this house, it must lie rather deep, probably as deep as the original built drain.

In this event, the said drain, thoroughly cleaned out, will form a good foundation for the pipes to rest upon down to cesspool 7.

Immediately before entering the cesspool 7, an intercepting trap (pattern A.) should be placed, and about six feet behind it an inlet aperture to permit the air to circulate freely through the whole system, passing out by the ventilating shafts formed, as already described, by the soil pipes of the water-closets, which should be carried up above the roof.

In the construction of a sewer of such length as the one in question, it would be wise to place occasional shafts for the purpose of inspection and the removal of obstructions, should such ever occur. These should be closed and covered over, and their localities noted in case of need.

At the time of my visit (21st February 1882) the needful amendments in the sanitation of the Governor's house were in progress, including the construction

tion of a pipe sewer outside the house, to replace the old built drain under the basement, receiving the soil pipe of w.c., &c.

I suggested at the time, and repeat it now, that an intercepting trap (pattern A.) should be placed between the Governor's house and the main sewer, and an inlet for air behind the said trap. Thus a perfect ventilation of the sewerage of the Governor's house would be secured, the upper outlet being the ventilating shaft (already in existence) opening above the roof.

I would further recommend that all the minor sewers and surface drains of the prison should be laid in earthenware pipes, and effectually trapped and ventilated.

The sewerage of the female prison (recently occupied by the "suspects") should be executed in a precisely similar manner in all details, pipes being substituted for built drains wherever they do not exist, ventilated by shafts, and carried down to cesspool 8, where also an intercepting trap (pattern A.) should be placed with air inlet behind it.

The last items connected with the sewerage arrangements which remain to be considered are the cesspools 7 and 8.

These must remain, owing to the situation of the Omagh Gaol.

As already stated, I am of opinion that no danger will arise from them to the inhabitants of the gaol, provided they are properly managed.

Their state of repair should be carefully looked to, especially the cementing, and the roofs should be effectually sealed, having, of course, a man-hole for the purposes of cleansing at intervals.

These cleansings should be regular, determined by the date of accumulation.

Each cesspool should have an overflow drain to the river, which will also act as a ventilator.

If any objection is raised to discharging the overflow into the river a screen partition must be erected in each cesspool, and the fluid sewage pumped out as it accumulates, and carried in closed vessels to a distance where it may be safely disposed of.

I append a little drawing, on the page following the ground plan of gaol, illustrating the important points to which I would studiously attend in the new sewerage arrangements.

Dr. Thompson alludes, in the Report which I have quoted, to faults in the prison dietary.

I need not open this matter now, as it has been carefully treated last year by a committee eminently qualified for the task.

A question will naturally arise as to what should be done with the prisoners during the execution of the coming useful sanitary reforms in Omagh Gaol.

The safest course would be to clear the building for the time. If this is impossible I would recommend, *at the least*, that the alterations be commenced in the female prison (now vacant by the transfer of the "suspects" elsewhere), and that when all is perfected there the male prisoners be removed to it, and the works connected with the male prison accomplished.

I do not consider that the Governor's house will be safe for habitation until the sewerage, &c., of the male prison, as well as its own, is perfect on the system which I have endeavoured to explain.

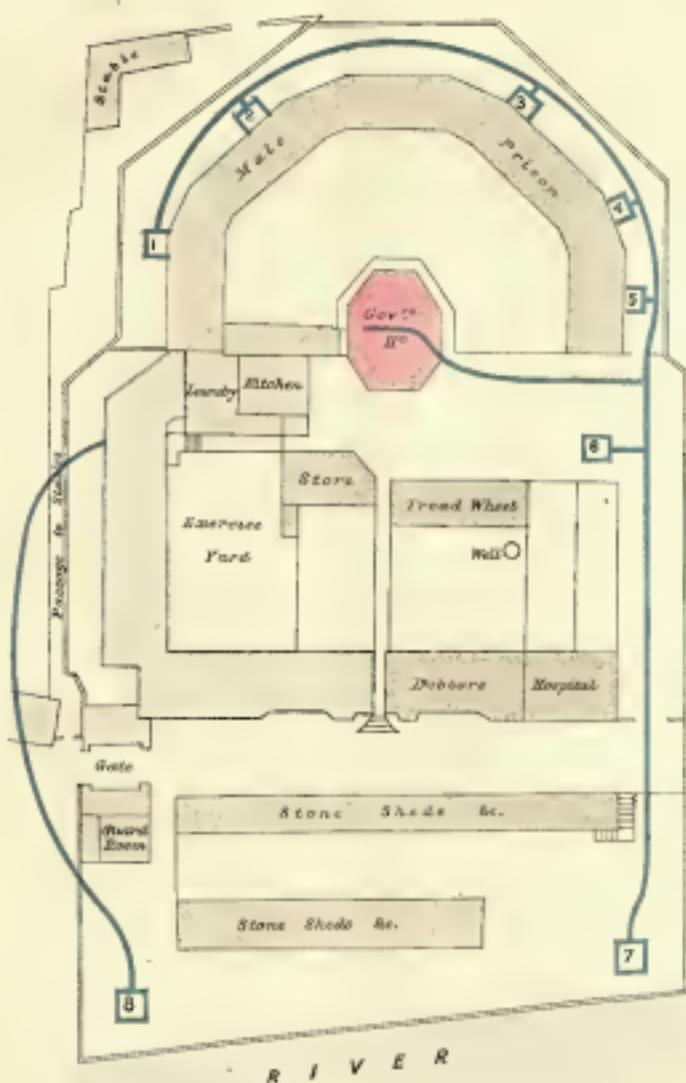
Gentlemen, I have now completed my task of pointing out the highly unsanitary state of Omagh Gaol, and the means by which its grave faultiness may be remedied.

For details, into which I do not intend to enter, I feel that I can safely refer you to the excellent advice of your able architect, Mr. W. J. Welland.

I am, &c.

(signed) *P. R. Orsire, M.D., F.C.P., F.C.P., &c.*

Ground Plan of Omagh Gaol - Sewerage &amp;c.



## OMAGH PRISON

(not to scale)

Grey - Local Prison Re.

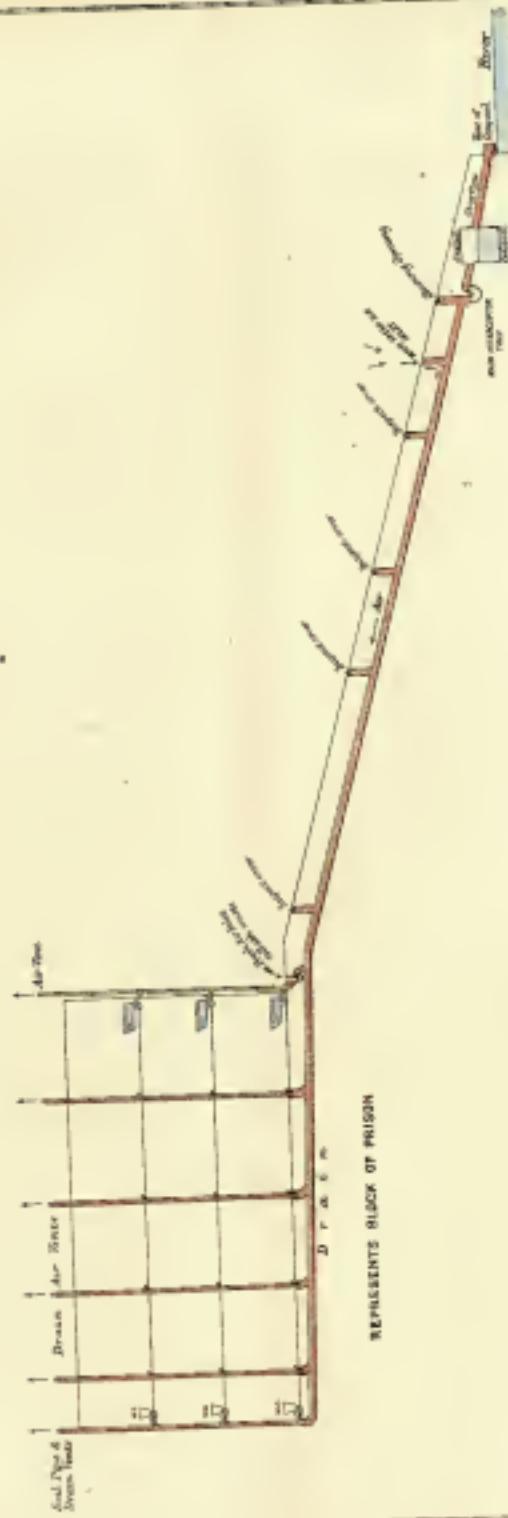
Blue - Suspects Prison.

Red - Governor's House.



Diagram, intended to suggest the general plan upon which the New Sewerage of Omagh Gaol should be carried out.

F. R. Durrer, M.D.







OMAGH GAOL.

Copy of Reasons made by R. R. Cawing, Esq., M.A.,  
L.R.C.P., upon the Summary Conviction of the  
Gaol in Omagh, the Result of a Special In-  
vestigation of that Institution made by him on  
11 February 1882.

(Mr. William Edward Foster.)

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